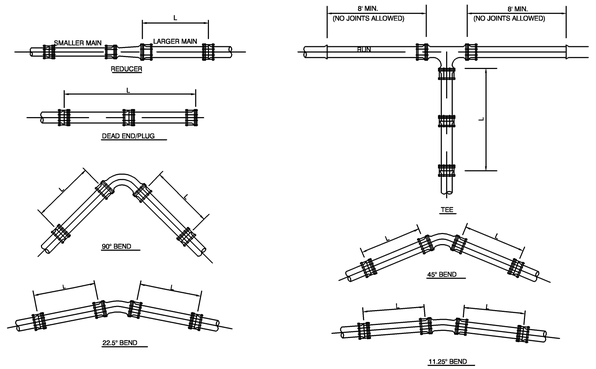


THRUST RESTRAINT DETAILS

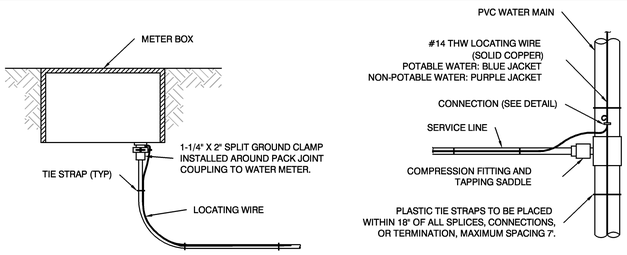
N.T.S.

FITTINGS (LENGTH IN FEET) (3-FT. COVER: 200 PSI TEST PRESSURE)						
PIPE SIZE (INCHES)	90° BEND P.V.C. (L)	45° BEND P.V.C. (L)	22.5 BEND P.V.C. (L)	11.25 BEND P.V.C. (L)	DEAD END & PLUG P.V.C. (L)	DESIGN PRESSURE PSI P.V.C. (L)
4	40'	20'	20'	20'	40'	150
6	60'	40'	20'	20'	60'	150
8	80'	40'	20'	20'	80'	150
10	80'	40'	20'	20'	80'	150
12	100'	40'	20'	20'	100'	150

NOTE: PROVIDE RESTRAINED JOINTS AT CHANGES IN DIRECTION OF ALL WATER MAINS. RESTRAIN ALL PIPE JOINTS WITHIN THE DISTANCES SHOWN IN THE FOLLOWING TABLE. DISTANCES APPLY TO LENGTHS OF PIPE ON EACH SIDE OF THE FITTING. TEES AND DEAD ENDS VALVED OR CAPPED ARE CONSIDERED EQUIVALENT TO 90 DEG. BENDS. (LENGTHS ARE BASED ON SOIL OF "TYPE 2 CLAY" BACKFILL AND UP TO 200 PSI TEST PRESSURE.)
JOINT RESTRAINTS SHALL BE MEGA-LUG.

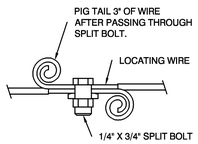
PIPE JOINT THRUST RESTRAINT DETAIL

N.T.S.



SERVICE AND METER

CONNECTION TO PVC MAIN



LOCATING WIRE SPLICING

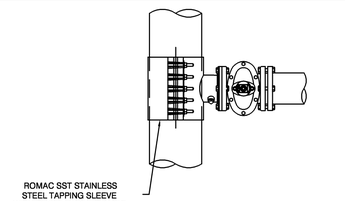
NOTES:

1. THE ENDS OF ALL LOCATING WIRES, WHETHER THEY ARE SPLICED, CONNECTED, OR TERMINATED, SHALL HAVE THE LAST THREE INCHES PIG TAILED AS DETAILED HEREON.

2. AFTER INSTALLATION OF THE LOCATING WIRE THE SYSTEM SHALL BE SUBJECTED TO TESTING, PRIOR TO BACK FILL, IN ORDER TO ESTABLISH THAT THE SYSTEM IS FUNCTIONAL.

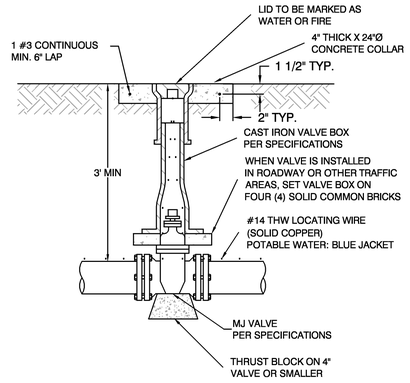
WATER SERVICE LOCATING WIRE DETAIL

N.T.S.



TAPPING SLEEVE AND VALVE DETAIL

N.T.S.



GATE VALVE AND BOX DETAIL

N.T.S.

GENERAL WATER NOTES

1. WATER SYSTEM COMPONENTS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND REGULATIONS, TESTED, CLEANED, DISINFECTED AND BACTERIOLOGICALLY CLEARED FOR SERVICE IN ACCORDANCE WITH THE LATEST AWWA STANDARDS AND CHAPTER 62-555, FLORIDA ADMINISTRATIVE CODE.

2. ALL PIPE SHALL BEAR THE "NSF" SEAL FOR POTABLE WATER.

3. WATER MAINS SHALL BE BLUE PVC CONFORMING TO AWWA C-900, DR 25. ALL COUPLINGS, CLEANING COMPOUNDS, SOLVENTS, LUBRICANTS, AND PIPE PREPARATION FOR LAYING, SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LATEST RECOMMENDATIONS.

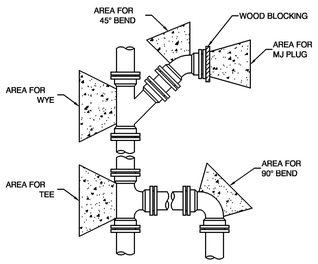
4. DEPTH OF WATER LINES FROM CROWN OF PIPE TO FINISHED GRADE SHALL BE 36".

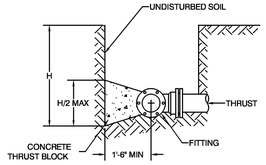
5. WHEN POOL EQUIPMENT IS TO BE INSTALLED AN AIR-GAP OF 3" MINIMUM SHALL BE MAINTAINED BETWEEN EQUIPMENT AND WATER AND SANITARY SYSTEMS.

6. ALL POTABLE WATER MAINS THAT ARE NOT BLUE PVC SHALL BE INSTALLED WITH IDENTIFIER TAPE LOCATED ON TOP OF PIPE & SECURED TAPE SHALL BE 3" VINYL BLUE IN COLOR WITH LETTERING INDICATING "POTABLE WATER" AT TWO FOOT INTERVALS ALONG TAPE.

SCHEDULE FOR THRUST BLOCK AREAS						
PIPE SIZE (Inches)	90° BEND (Sq. Ft.)	45° BEND (Sq. Ft.)	22½ BEND (Sq. Ft.)	11¼ BEND (Sq. Ft.)	TEE & PLUG (Sq. Ft.)	DESIGN PRESSURE (P.S.I.)
4	2.0	1.0	0.5	0.25	1.4	150
6	4.0	2.2	1.1	0.6	2.9	150
8	7.0	3.9	1.9	0.9	5.0	150
10	11.4	6.2	3.2	1.6	8.1	150
12	16.3	8.8	4.5	2.3	11.5	150

NOTE: Thrust block areas computed on basis of 2000 lbs. per sq. ft. soil resistance bearing.





NOTES:

1. THRUST BLOCK BEARING AREAS SHALL BE POURED AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE ALL LOOSE MATERIAL AND EXTEND TO UNDISTURBED MATERIAL.

2. EXTEND THRUST BLOCK FOR FULL LENGTH OF FITTING. PLACE WOOD BLOCKING IN FRONT OF PLUGS BEFORE POURING CONCRETE. THE JOINTS OF FITTINGS SHALL NOT BE COVERED IN CONCRETE.

3. ALL JOINTS SHALL BE WRAPPED IN PLASTIC FILM BOND BREAKER BEFORE CONCRETE IS PLACED.

4. ROUGH BLOCKING FORMS SHALL BE USED ALONG THE SIDES OF THRUST BLOCKS.

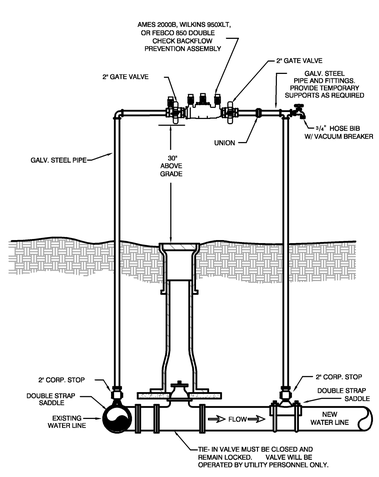
5. THRUST BLOCKS SHALL BE USED IN COMBINATION, AS REQUIRED, TO SUIT THE SPECIFIC FITTING ARRANGEMENT.

6. ALTERNATE DESIGN RESTRAINING SYSTEMS SHALL BE PROVIDED WHERE STANDARD THRUST BLOCKING IS NOT SUITABLE.

7. ALL WOOD BLOCKING SHALL BE PRESSURE TREATED FOR GROUND CONTACT.

PIPE JOINT THRUST RESTRAINT DETAIL

N.T.S.



TEMPORARY JUMPER DETAIL

N.T.S.

POTABLE WATER CLEARANCE REQUIREMENTS

VERTICAL SEPARATION: BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAIN, RECLAIMED WATER PIPELINES.

1. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY-OR VACUUM-TYPE SANITARY SEWER OR STORM SEWER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES, AND PREFERABLY 12 INCHES, ABOVE OR AT LEAST 12 INCHES BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.

2. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESSURE-TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.

3. AT THE UTILITY CROSSINGS DESCRIBED IN PARAGRAPHS 1 AND 2 ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORMSEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PARTI II OF CHAPTER 62-610, F.A.C. AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY-OR PRESSURE-TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.

4. SEPARATION BETWEEN WATER MAINS AND SANITARY OR STORM SEWER MANHOLES.
   A. NO WATER MAIN SHALL PASS THROUGH, OR COME IN CONTACT WITH, ANY PART OF A SANITARY MANHOLE.
   B. WATER MAINS SHALL NOT BE CONSTRUCTED OR ALTERED TO PASS THROUGH, OR COME INTO CONTACT WITH ANY PART OF A STORM SEWER MANHOLE OR INLET STRUCTURE.
5. WHERE AN UNDERGROUND WATER MAIN IS BEING LAID LESS THAN THREE FEET HORIZONTALLY FROM ANOTHER PIPELINE AND WHERE AN UNDERGROUND WATER MAIN IS CROSSING ANOTHER PIPELINE AND IS BEING LAID LESS THAN THE REQUIRED MINIMUM VERTICAL DISTANCE FROM THE OTHER PIPELINE:
   A. USE OF PIPE, OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (I.E., HAVING AN IMPACT STRENGTH AT LEAST EQUAL TO THAT OF 0.25-INCH-THICK DUCTILE IRON PIPE) OR CONCRETE ENCASEMENT AT LEAST FOUR INCHES THICK FOR THE WATER MAIN: AND
   B. USE OF PIPE, OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (I.E., HAVING AN IMPACT STRENGTH AT LEAST EQUAL TO THAT OF 0.25-INCH-THICK DUCTILE IRON PIPE) OR CONCRETE ENCASEMENT AT LEAST FOUR INCHEST THICK FOR THE OTHER PIPELINE IF IT IS NEW AND IS CONVEYING WASTEWATER OR RECLAIMED WATER.

POTABLE WATER CLEARANCE REQUIREMENTS

HORIZONTAL SEPARATION: BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAIN, RECLAIMED WATER PIPELINES, AND ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS.

1. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATERMAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.

2. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE HORIZONTAL DISTANCE OF AT LEAST THREE FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED VACUUM-TYPE SANITARY SEWER.

3. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY-OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PARTIII OF CHAPTER 62-610, F.A.C. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY-TYPE SANITARY SEWERS SHALL BE REDUCED TO THREE FEET WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER.

4. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST TEN FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND ALL PARTS OF ANY EXISTING OR PROPOSED "ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM" AS DEFINED IN SECTION 381.0065(2), F.S., AND RULE 64E-6002, F.A.C.

5. WHERE AN UNDERGROUND WATER MAIN IS BEING LAID LESS THAN THE REQUIRED MINIMUM HORIZONTAL DISTANCE FROM ANOTHER PIPELINE AND WHERE AN UNDERGROUND WATER MAIN IS CROSSING ANOTHER PIPELINE AND JOINTS IN THE WATER MAIN ARE BEING LOCATED LESS THAN THE REQUIRED MINIMUM DISTANCE FROM JOINTS IN OTHER PIPELINE:
   A. USE OF PRESSURE-RATED PIPE CONFORMING TO THE AMERICAN WATER WORKS ASSOCIATION STANDARDS INCORPORATED INTO RULE 62-555.330, F.A.C., FOR THE OTHER PIPELINE IF IT IS GRAVITY-OR VACUUM-TYPE PIPELINE;
   B. USE WELDED, FUSED OR OTHERWISE RESTRAINED JOINTS FOR EITHER WATER MAIN OR THE OTHER PIPELINE; OR
   C. USE OF WATERTIGHT CASING PIPE OR CONCRETE ENCASEMENT AT LEAST FOUR INCHES THICK FOR EITHER THE WATER MAIN OR THE OTHER PIPELINE.

BY	REVISIONS	DATE

FARNER BARLEY AND ASSOCIATES, INC.
ENGINEERS ▲ SURVEYORS ▲ PLANNERS
Certificate of Authorization Number: 4709
4450 N.E. 83rd Road ○ Wildwood, Florida 34785 ○ (352) 753-3114

THE OAKS AT 138TH
SUMTER COUNTY FLORIDA

WATER DISTRIBUTION DETAILS

DATE	07-07-09
DRAWN BY	DLB
CHKD BY	JAH
FILE NAME	WATER
JOB NO.	065146.0004

SHT. 13 OF 13

S:\SUMTER\NON-VILLAGES PROJECTS\THE OAKS AT 138TH\CIVIL\CONSTRUCTION\013-OAKS-WATER DETAILS.dwg, 7/8/2009 4:03:02 PM, KP6600.pc3, 1:60, Daniel